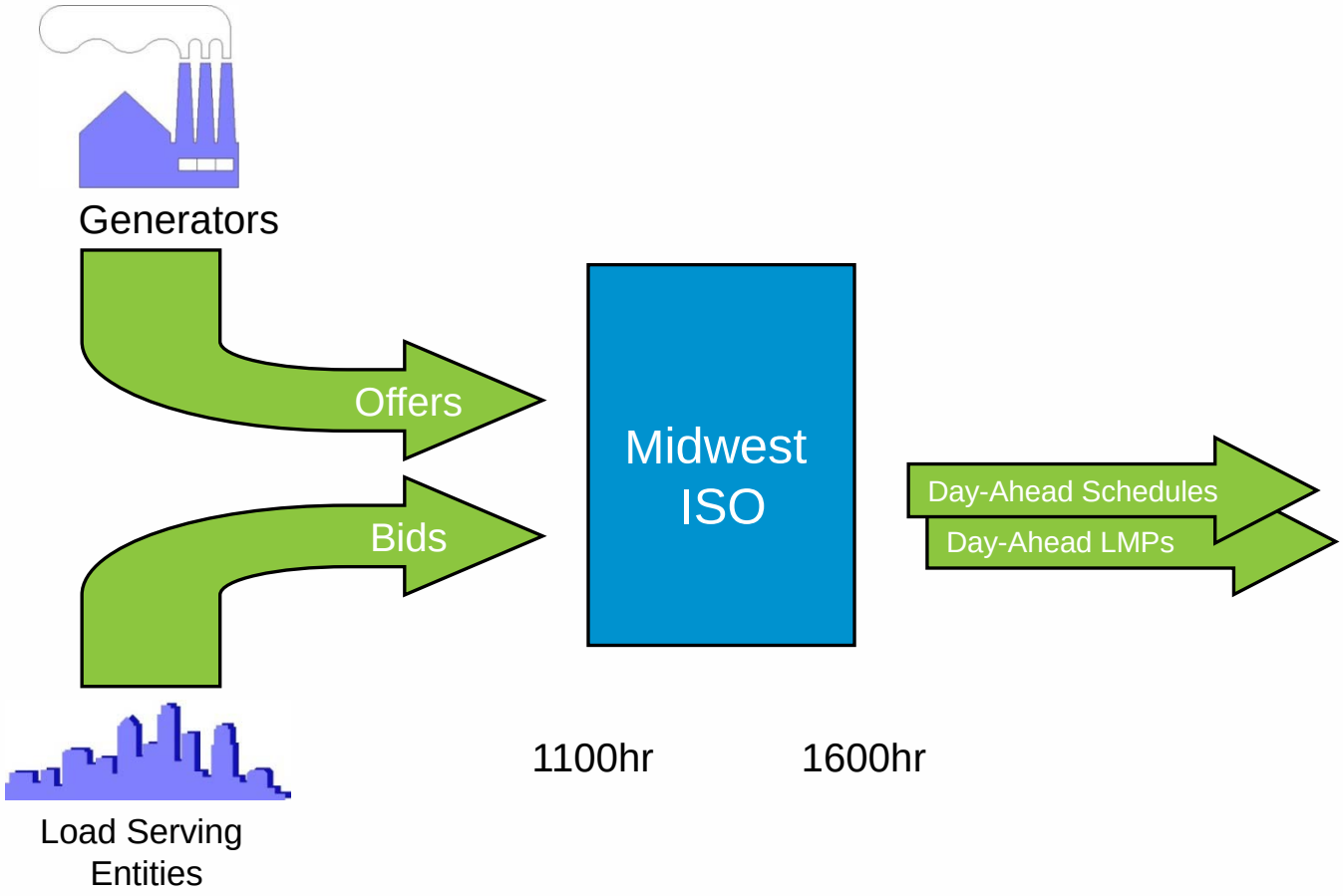
Day-Ahead Market



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Real-Time Market

Real-Time Market

- A continuous process of balancing generation and demand at least cost while recognizing current operating conditions
- Manage congestion via Locational Marginal Pricing and Generation Redispatch

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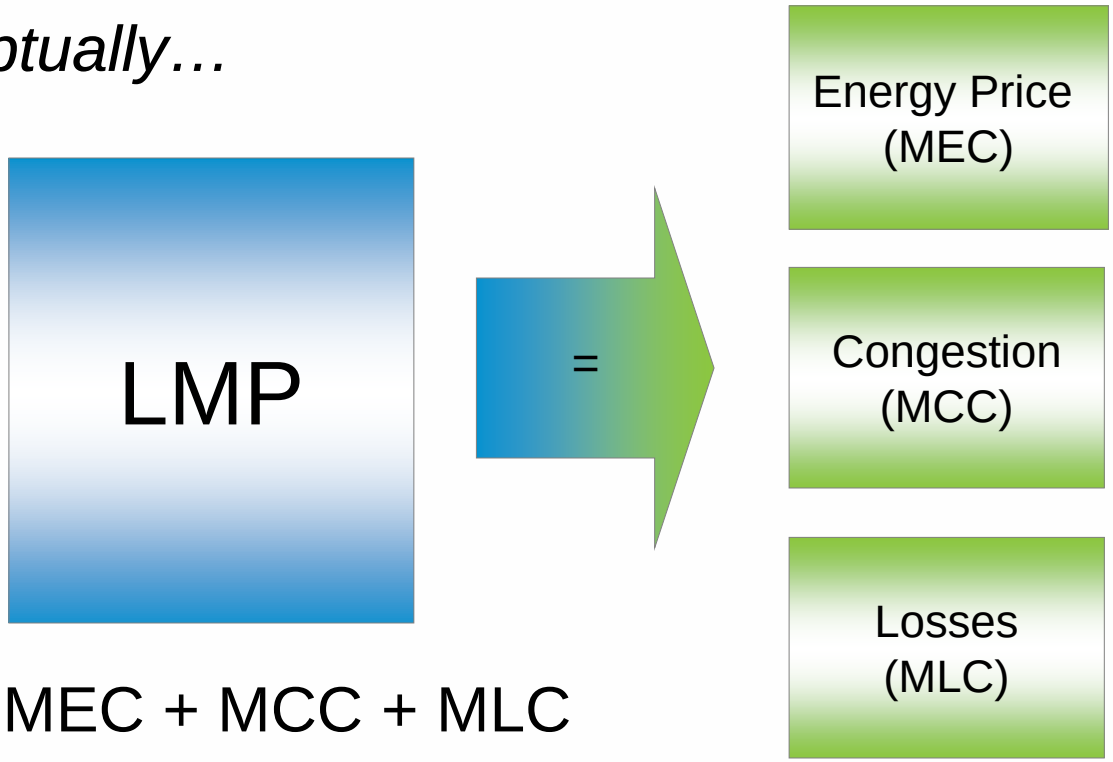
Locational Marginal Pricing

LMP Components

- *Conceptually…*



- LMP = MEC + MCC + MLC

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Financial Transmission Rights

- Provides a mechanism for Market Participants to manage the risk of congestion
- FTRs apply to the Day-Ahead Market only
- Financial Mechanism ONLY (not tied to physical delivery)
- FTRs hedge against congestion only - not losses

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Ancillary Services

- What are Ancillary Services?
  - Ancillary Services are defined as services necessary to support Capacity and the transmission of Energy from Resources to Loads while maintaining reliable operation of the Transmission System in accordance with Good Utility Practice.
  - Ancillary Services are commonly known in the industry as a collection of secondary services offered to help insure the reliability and availability of energy to consumers. These services include regulation, spinning reserve, supplemental reserve, voltage regulation, black-start and others.

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What do Ancillary Services Provide?

- Flexible capacity to be available when needed to maintain secure operation of power system due to:
  - Loss or increase of Load (Demand)
  - Loss or increase of Resources (Generation/Transmission)
- Basically, these services help to keep the system in balance

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What is a Balancing Authority?

- The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area and supports Interconnection Frequency in real-time

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BA Functional Alignment

- Clear and concise roles and responsibilities between the Midwest ISO Balancing Authority Area (MBAA) and Local Balancing Authority (LBA)
- Ensure each Balancing Authority (BA) requirement in NERC is accomplished for entire operations area
- Reviewed NERC Standards and NERC Functional Model
- Developed Midwest ISO and BA Functional Alignment White Paper
- Amend Balancing Authority Agreement based on functional split

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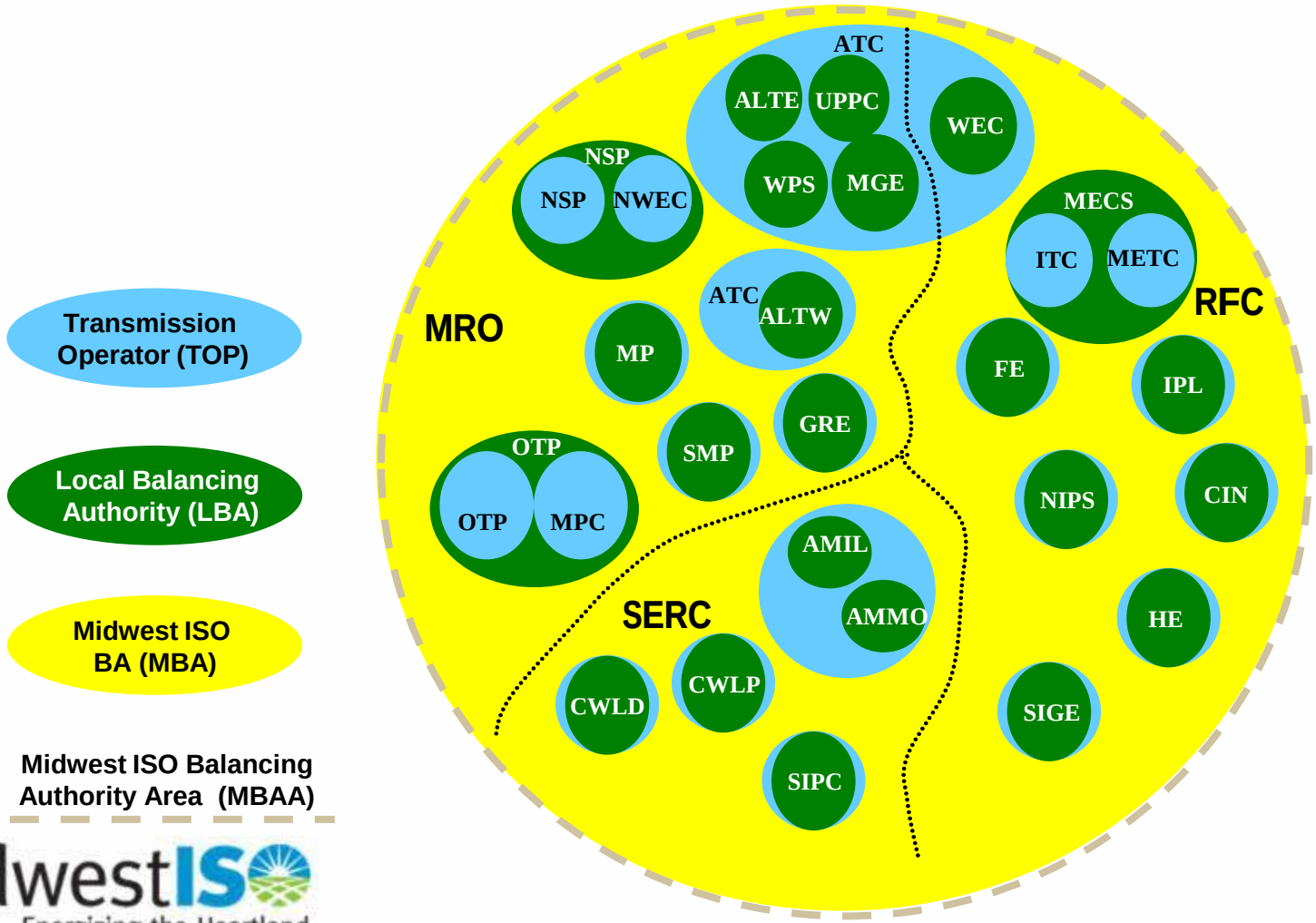
Midwest ISO Balancing Authority



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Balancing Authority Responsibilities

Local Balancing Authorities

- Maintain interconnection telemetry, metering and associated accounting
- Send the area Net Actual Interchange (NAI) to the Midwest ISO Balancing Authority
- Establish equipment ratings and monitor their local system in Real-Time
- Send Dispatch signals from Midwest ISO BA to generation plants in area (in some cases)
- Implement Emergency Procedures including load shedding

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Balancing Authority Responsibilities

Midwest ISO Balancing Authority

- Calculate the Area Control Error (ACE) for the footprint using:
  - Net Actual Interchange (NAI) from all the First Tier Balancing Areas
  - Collect Frequency bias from all Local Balancing Areas
- Maintain the ability to run Automatic Generation Control (AGC)
- Comply with Control Performance and Disturbance Control Standards
- Repay its Inadvertent Interchange balance with the Eastern Interconnection

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